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The third Paper read was—

3. *Exploration of Central Australia from Melbourne, viâ Cooper Creek.*

THE Victoria camel expedition to explore the desert of Australia, by way of Cooper Creek, has already left Melbourne, and notes of its first fourteen days' march have been received. The exploratory caravan consists of 26 camels; besides these are horses and waggons to convey twelve months' stores to Cooper Creek, where a dépôt will be established. A large item in the stores of provisions is the "expedition-biscuit," which, like the well-known American meat-biscuit, consists of meat dried and pounded, mixed with a proportion of flour, and baked, and forms an exceedingly portable means of subsistence. The camels are supplied with leather shoes shod with iron, and carry waterproof coverings lined with flannel, to protect them in adverse weather. The party is under the leadership of Mr. R. H. Burke; the camels are under the charge of Mr. G. J. Landells; Mr. W. J. Wills, surveyor and astronomical observer, is the third in command; Dr. Hermann Beckler is the medical officer and botanist; and Dr. Ludwig Becker is artist, naturalist, and geologist. Besides these, are ten men, not including three Indian Mohammedans, who have the immediate charge of the camels.

On Aug. 20th the first start was made from Melbourne: thence the expedition has travelled by fourteen easy stages to Swan Hill, in exceedingly wet weather. There was difficulty in persuading the camels across the only creek that interrupted their progress. Some natives, who visited one of the camps, showed terror at the sight of the camels, and would not approach within spear's throw. The Indian attendants work well.

The PRESIDENT said, there were several interesting particulars in the paper from Melbourne which had been read, including a graphic description of the start of the caravan. The use of the camel was a new feature in the exploration of this country, and he hoped it would be attended with success; for the difficulties in the interior, arising from the want of water, were similar to those found in Africa and other sandy countries. At the starting of the expedition, not only hundreds but thousands of people congregated together to see the party leave, animated by high hopes of the advantages to be derived from success.* As Mr. Gregory was present, he hoped he would say a few words in explanation of the expedition from West Australia upon which he was about to enter, and of the views which had induced him to undertake it.

MR. GREGORY, F.R.G.S., proceeded to describe the physical character of that portion of the country seen by him in former expeditions in Western Aus-

* Although the Members of the Expedition have quarrelled among themselves, the leader left for Cooper Creek on the 19th of October, with 7 whites, 3 coloured men, 16 camels, and 19 horses.—ED.

tralia. The greater portion was exceedingly level, having an average elevation of from 900 to 1200 feet. It had a sandstone table-land of probably no great extent, and granite cropped out on the western coast with a few broken hills, occasionally rising to an elevation of 1800 feet. Proceeding northwards up towards the Gascoigne River, the country gradually rose, till the head rivers themselves had an elevation of about 1700 feet. The summit of the highest hill which he ascended amounted to 3500 feet. He therefore had reason to think that, although not absolutely a range of mountains, there was a tract of elevated country, forming a watershed, not only to the westerly, but to the eastward and north-eastward. His brother, in 1855 and 1856, traced a creek, which he named Sturt Creek (about 300 miles inland), from the table-land in which the Victoria River took its rise, and which was about 1600 feet above the sea at its greatest elevation; and in tracing it down he descended to a level of more than 900 feet. This fact gave him reason to hope that between that point, going towards Western Australia, and the elevated country in which the Gascoigne took its rise, there must be a depression; and he would venture to suggest, though he knew many geographers were opposed to the hypothesis, that a river was to be found, draining the greater portion of Western Australia, which emptied itself in somewhere about longitude 122° E., in the bottom of a low sandy bight on the north-west coast. Should that prove to be the case, there was every prospect of finding a way into Central Australia; should it be otherwise, he feared the country would turn out to be a low sandstone depression, probably covered with sandy desert, similar to what we had seen in other parts of Australia. The great object of his mission was to try and set that question at rest, and also to see whether lands suitable for colonisation could not be found on the north-west coast.

MR. WM. BURGESS said he had been a settler in Australia more than thirty years, and the expedition which was now proposed had been in some measure taken up in the colony at his instigation. He formed one of the deputation from the Society which waited upon the Colonial Secretary, and he hoped it would be arranged that the expedition should start from Nicol Bay, and explore south to meet the point attained in Mr. Gregory's former expeditions; and after that country had been thoroughly explored, and a port discovered fit for settlement, then the remainder of the six months to be devoted to exploring towards the north up to Roebuck Bay in search of a river. He was sorry to find that this plan might be changed, and that the expedition might start from Roebuck Bay.

SIR RODERICK MURCHISON said the Geographical Society had nothing to do with the details of Mr. Gregory's expedition, which must be settled in the colony of Western Australia. All that the Society had to do was to promote the science to which they were devoted, by appealing to the Government for a grant to enable Mr. Gregory to carry out his plan. The grant had been obtained conditionally, and whatever plan was carried out would, no doubt, bring a considerable addition to their geographical knowledge. He had always wished to see established some port on the north-west coast, both as a naval station and as a harbour of refuge, and it was a discredit to us to remain ignorant of the physical structure, the productions, and capabilities of that portion of the Australian continent.

COLONEL GAWLER, F.R.G.S., stood somewhat in opposition to Sir Roderick Murchison in his opinion that the centre of Australia was an arid desert. That conclusion agreed with Mr. Jukes's theory, but he thought Mr. Jukes was wrong in many points. First, in underrating the character of the Murray, which he spoke of as a stream that could hardly force its way into the sea. Now he had ascended the Murray 180 miles with Captain Pullen, at present of the *Cyclops*, in the Government cutter *Water Witch*, and they never drew less than 13 feet water, and in some places the depth was 40 feet; while at the

North Bend, the highest point to which they reached, the river was 250 yards broad. Again, Mr. Jukes imagined that the great interior was a vast tertiary mass, with very little primary formation in it. Now there was much of the primary formation known. The great base of the Australian Alps and of the Adelaide chain was of primary formation; and on the shores of the Port Lincoln peninsula he distinctly saw gneiss and mica-slate broadly developed and going away to the north-west into the interior. Therefore, with so much primary formation on the coast, there was no reason why it should not reappear in the interior, and all the consequences of drainage from those ranges, and soil formed by their detritus, occur in large extent. He admitted the fact that there was a desert to the eastward of Lake Torrens; but then, when he saw that there was a fine country far away to the north, to the eastward, and to the southward, he could find no reason to suppose that there was no fine country to the westward also. He felt confidence in thus thinking, for since his return from South Australia he had theorized, judging from atmospheric influences, that there was a fertile country to the north-west of Spencer Gulf, and since then there had been discovered a well-watered country half as large as Ireland. He also questioned the accuracy of Mr. Jukes's statement that Mr. Eyre, in his journey from the Port Lincoln peninsula to Western Australia, did not cross the mouth of one large drainage outlet. He passed for several hundred miles along the top of high chalk cliffs, and then came to a deep sandbank 130 miles in length, the cliffs going off north-west into the interior. Having traversed this sandbank, he came to cliffs again running along the shore, but which ward off north-east into the interior. As he came near the sandbank he found atmospheric evidences, in connexion with the flight of water-birds into the interior, which led to the conclusion that there was to the northward of him a great extent of well-watered country. It appeared to him that this sandbank was the bar of a great drainage coming down from the interior, formed by the tremendous rollers of the Southern Ocean. With facts such as these before us, we might reasonably conclude that in the western half of Australia there might be a large extent of good and well-watered country, which might serve to connect the south-eastern provinces with the north-west coast, as a transit for live stock, as well as for railways and telegraphs.

Mr. A. Roe, Surveyor-General of Western Australia, said that, as a colonist, he must, to a certain extent, agree with some of the observations which had fallen from Mr. Burgess relative to the proportion which the colony was called upon to contribute to an expedition which, in itself, was only remotely beneficial to Western Australia. Yet, for all that, he hoped the expedition would meet with success, and that, as the object was to advance the general progress of geographical discovery, the colonists would cheerfully come forward and render all the aid in their power. With respect to the various theories which had been broached as to the interior of the country, he thought it was time all these were put aside, and that we went manfully to work in the path of actual discovery. Though Surveyor-General of Western Australia, he must plead total ignorance of the country about to be explored beyond what was known to any individual in the room, except that he had been in a vessel along part of the coast. Of the interior, however, he knew nothing. He thought the Geographical Society had acted wisely in accepting the services of Mr. Gregory. He had a great deal of personal knowledge of that gentleman, from having had him under his own eye in his department as Surveyor-General. He could speak to his fitness for the task, and he had no doubt that the expectations of the Society would in him be fully realized.